

REMARKS

After entry of this amendment, claims 45 and 47-62 are pending. Claims 45 and 60 have been amended without prejudice or disclaimer and find support *inter alia* in the original claims. Further support is found in the specification at page 5, lines 13-19. Claim 45 finds additional support at page 29, lines 16-26. New claims 61 and 62 have been added and find support *inter alia* in the original claims. No new matter has been added.

Claim Rejections – 35 U.S.C. §102(b)

Claims 45, 47, 49-50, 55-58 and 60 are rejected under 35 USC § 102(b) as being anticipated by Ohlrogge et al. (U.S. Pat. No. 5,925,805, hereinafter “Ohlrogge”). Claims 45, 47-52, 55-56, 58 and 60 are further rejected under 35 USC § 102(b) as being anticipated by Zou et al. (U.S. Pat. No. 6,051,755, hereinafter “Zou”). Applicants respectfully disagree and traverse the rejections.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegall Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). “[T]o hold that a prior art reference anticipates a claim, the Board must expressly find that every limitation in the claim was identically shown in the single reference.” *Gechter v. Davidson*, 116 F.3d 1454, 1460 (Fed. Cir. 1997).

Ohlrogge teaches a method for producing oil by transforming a soybean plant with a plant cytosolic acetyl-CoA carboxylase. Ohlrogge does not teach a transformed plant that overexpresses at least one hemoglobin or a method for the production of starch and/or oil comprising growing such a plant.

Similarly, Zou teaches a method for producing oil by transforming an Arabidopsis plant with a sn-2 acylglyceride fatty acyltransferase gene (SLC1). Zou does not teach a transformed plant that overexpresses at least one hemoglobin or a method for the production of starch and/or oil comprising growing such a plant.

Because neither Ohlrogge nor Zou teaches a transformed plant that overexpresses at least one hemoglobin or a method for the production of starch and/or oil comprising growing such a

plant, neither Ohlrogge nor Zou anticipates the claims. In light of the present amendment and the above remarks, reconsideration and withdrawal of the rejections is respectfully requested.

Claim Rejections – 35 U.S.C. §103(a)

Claims 45 and 47-60 are further rejected under 35 USC § 103(a) as being obvious over Harper in view of Sowa and Nykiforuk. Applicants disagree in view of the present amendment and for the following reasons.

To support a *prima facie* conclusion of obviousness, the prior art must disclose or suggest all the limitations of the claimed invention. See *In re Lowry*, 32 F.3d 1579, 1582, 32 USPQ2d 1031, 1034 (Fed. Cir. 1994).

As discussed in Applicants' responses to Office Actions previously filed, Harper teaches clusters of genes that are regulated in response to a stress condition in plants, such as plant polynucleotides whose expression is altered in response to stress conditions, and the production of transgenic plants expressing said polynucleotides. See paragraph [0011] of Harper. Although Harper discloses hemoglobin coding genes, Harper does not teach or suggest that overexpression of those hemoglobin genes in a plant would increase production of starch and/or oil. Likewise, Harper does not teach or suggest a method for the production of starch and/or oil comprising growing a transformed plant that overexpresses at least one hemoglobin gene.

The combination of Harper with Sowa and Nykiforuk does not remedy the lack of such a teaching in Harper. Sowa discloses altering hemoglobin levels changes energy status in maize cells under hypoxia. See Title at page 10317. As described at page 10318, Sowa transformed cultured maize cells with a barley hemoglobin gene. The entire experiment was conducted with the transformed cell lines alone. No maize plant was generated or grown. Thus, Sowa does not teach or suggest a transformed plant that overexpresses at least one hemoglobin, let alone the increase production of starch and/or oil in such a transformed plant. Nor does Sowa teach a method for the production of starch and/or oil comprising growing such a transformed plant.

In the contrary, Sowa actually teaches away that overexpressing at least one hemoglobin in a transformed plant could result in an increase in starch and/or oil content in such a plant. As disclosed at page 10318, right Col., 1st full paragraph, and Fig. 3, when grown in an air environment (i.e. not under hypoxia), the cell lines transformed with hemoglobin ("HB+") did

not differ significantly from the wild type ("Wild") with respect to culture growth rate. Additionally, a lack of effect of hemoglobin on cell growth and oxygen uptake was observed under normal air condition. See page 10319, Right Col., last paragraph. From this teaching, one of ordinary skill in the art would not have been motivated to overexpress a hemoglobin gene in a plant with a reasonable expectation of success that an increase in starch and/or oil content in such a plant would have been obtained.

Likewise, Nykiforuk discloses recovering oil from transgenic plants comprising diacylglycerol O-acyltransferase (DGAT) polynucleotides which encode polypeptides having DGAT activity. Nykiforuk does not teach or suggest a transformed plant that overexpresses at least one hemoglobin or a method for the production of starch and/or oil comprising growing such a plant.

Because Harper, Sowa, and/or Nykiforuk, alone or in combination, does not teach or suggest a transformed plant that overexpresses at least one hemoglobin or a method for the production of starch and/or oil comprising growing such a plant, and because Sowa teaches away that overexpressing at least one hemoglobin in a transformed plant could result in an increase in starch and/or oil content in such plant, it follows that the combination of these references would not have rendered the claims as amended obvious. In view of the present amendment and further in view of the above remarks, reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the present amendment and further in view of the above remarks, Applicants respectfully request withdrawal of the rejections and allowance of the claims. If any outstanding issues remain, the Examiner is invited to telephone the undersigned at the number given below.

Applicants reserve all rights to pursue the non-elected claims and subject matter in one or more divisional applications, if necessary.

Applicants are submitting their response within the three-month response period. No fee is believed due. However, if any fee is due, the Director is hereby authorized to charge our Deposit Account No. 03-2775, under Order No. 13311-00008-US from which the undersigned is authorized to draw.

Respectfully submitted,

By /s/ Hui-Ju Wu

Hui-Ju Wu, Ph.D.

Registration No.: 57,209

CONNOLLY BOVE LODGE & HUTZ LLP

1007 North Orange Street

P. O. Box 2207

Wilmington, Delaware 19899-2207

(302) 658-9141

(302) 658-5614 (Fax)

Agent for Applicants

#636097